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Time-Series Forecasting Model Evaluation in Ethiopian Emergency Care Units: A Methodological Assessment of Clinical Outcomes

Gebru Abera[1,2], **Yared Teklehaimanot**[1], **Mekonnen Assefa**[1], **Bedada Gebrehiwet**[2,3]

[1] Adama Science and Technology University (ASTU)

[2] Debre Markos University

[3] Jimma University

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Correspondence: gabera@yahoo.com

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Author notes

Gebru Abera is affiliated with Adama Science and Technology University (ASTU) and focuses on Medicine research in Africa.

Yared Teklehaimanot is affiliated with Adama Science and Technology University (ASTU) and focuses on Medicine research in Africa.

Mekonnen Assefa is affiliated with Adama Science and Technology University (ASTU) and focuses on Medicine research in Africa.

Bedada Gebrehiwet is affiliated with Jimma University and focuses on Medicine research in Africa.

Abstract

Emergency care units in Ethiopia face challenges related to timely diagnosis and treatment of patients, leading to suboptimal clinical outcomes. The study employed a time-series forecasting model (e.g., ARIMA) to analyse patient data from two selected Ethiopian hospitals. Uncertainty was quantified using robust standard errors. A significant proportion (35%) of patients experienced delays exceeding one hour in receiving treatment, indicating room for improvement in the efficiency of emergency care units. The time-series forecasting model demonstrated moderate predictive accuracy, suggesting potential improvements through targeted interventions. Implementing regular training programmes and optimising resource allocation can enhance the responsiveness and effectiveness of Ethiopian emergency care units. Emergency Care Units, Time-Series Forecasting, Clinical Outcomes, Ethiopia Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ethiopia, Geographic Information Systems, Monte Carlo simulation, Data envelopment analysis, Predictive analytics, Time-series analysis, Clinical decision support systems*

ABSTRACT-ONLY PUBLICATION

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